Dr. Baijun Tian

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EDUCATION

- Doctor of Philosophy in Oceanography March 2002

  Scripps Institution of Oceanography, University of California, San Diego
  Dissertation: *Tropical Cloud Radiative Forcing and the Hadley/Walker Circulation*
  Committee: Drs. V. Ramanathan (chair), Richard C. J. Somerville, Lynne D. Talley, Gudrun Magnusdottir, Jeff P. Severinghaus, and Carl H. Gibson

- Master of Science in Meteorology June 1996

  Department of Geophysics, Peking University, China.

- Bachelor of Science with Honors in Meteorology June 1992

  Department of Geophysics, Peking University, China.

HONORS AND AWARDS

- Postdoctoral Fellowship, Program in Atmospheric & Oceanic Sciences, Princeton University, 2002
- The Excellent Graduate of the Year, Peking University, China, 1992.

PROFESSIONAL ACTIVITIES

- Reviewer of proposals for NOAA Climate and Global Change Program
- Reviewer of manuscripts for *J. Climate*, *J. Geophys. Res.*, and *Mon. Wea. Rev.*
- Member, American Geophysical Union and American Meteorological Society

COMPUTER EXPERIENCE

- FORTRAN, C-Shell, UNIX, Linux, NetCDF, IDL
- Parallelized Computational Environment, GFDL FMS
- MS Windows, Word, PowerPoint, HTML

RESEARCH INTERESTS

- Deep Convection, Clouds, Water Vapor, and Radiation
- Climate Dynamics and Modeling
- Atmosphere-Ocean-Land Interaction

PROFESSIONAL EXPERIENCE

- Postdoctoral Research Associate, July 2002–Present

  Program in Atmospheric & Oceanic Sciences, Princeton University, Princeton, NJ

  In collaboration with Dr. Soden, I documented the diurnal cycle of upper tropospheric relative humidity (UTH) and its relationship to deep convection and high clouds in satellite observations and climate model simulations. With Drs. Held, Soden, and Lau, I documented the diurnal cycle of summertime deep convection over North America using satellite radiances and surface observations. With Dr. Held, I investigated the cause of the double inter-tropical convergence zone (ITCZ) bias in climate models through moist static energy budget analysis and simple models.

- Graduate Student Researcher, August 1996–March 2002

  Center for Clouds, Chemistry & Climate, Center for Atmospheric Sciences, Scripps Institution of Oceanography, University of California San Diego, La Jolla, CA.

  In collaboration with Dr. Ramanathan, I explored the role of cloud-radiation interaction in the Hadley and Walker circulation using a combination of satellite data, re-analysis data, and simple models of atmospheric dynamics, thermodynamics, and radiation. In particular, I constructed a new, simple conceptual model for the large-scale tropical atmospheric circulation. Coursework in climate and climate change, atmospheric dynamics and physics, radiative transfer, physical and dynamical oceanography, marine chemistry, and geophysical data analysis.

- Graduate Research Assistant, September 1993–July 1996

  Department of Geophysics, Laboratory of Severe Storm Research, Peking University, Beijing, P. R. China.

  I studied the mesoscale convective storms in mid-latitude using lightning data collected by radar systems (Advisor: Prof. Tao). Coursework in geophysical fluid dynamics, observations and theories of atmospheric general circulation, global climate system and simulation, mesoscale meteorology, nonlinear waves, chaos and fractals in sciences, and advanced mathematics and special functions.

- Research Assistant, July 1992–August 1993

  Department of Geophysics, Peking University, Beijing, P. R. China.

I studied the objective analysis of weather station data and diagnosed the dynamic and thermodynamic structures of a typhoon (Advisor: Prof. Tao).

PUBLICATIONS

- Peer-reviewed Journal Papers

1. Tian, B., I. M. Held, B. J. Soden, and N.-C. Lau, 2004: Diurnal cycle of summertime deep convection over North America: A satellite perspective. In preparation.

2. Tian, B., B. J. Soden, and X. Wu, 2004: Diurnal cycle of convection, clouds, and water vapor in the tropical upper troposphere: Satellites versus a general circulation model. *J. Geophys. Res.,* **109,** D10101, doi:10.1029/2003JD004117.

3. Tian, B., and V. Ramanathan, 2003: A simple moist tropical atmosphere model: The role of cloud radiative forcing. *J. Climate*, **16**, 2086–2092.

4. Tian, B., and V. Ramanathan, 2002: Role of tropical clouds in surface and atmospheric energy budget. *J. Climate*, **15**, 296–305.

5. Tian, B., G. J. Zhang, and V. Ramanathan, 2001: Heat balance in the Pacific warm pool atmosphere during TOGA COARE and CEPEX. *J. Climate*, **14**, 1881-1894.

6. Tao, Z., H. Wang, and B. Tian, 1995: Cloud system structure evolution of typhoon No. 9216 after landing. *Q. J. Appl. Meteor.*, **6**, 146-152.

7. Tao, Z., and B. Tian, 1994: Asymmetric structure and torrential rain of typhoon No. 9216 after landing. *Q. J. Trop. Meteor.*, **10**, 69-77.

- Ph.D. Dissertation

Tian, B., 2002: *Tropical Cloud Radiative Forcing and the Hadley/Walker Circulation*. Scripps Institution of Oceanography-UCSD, 192 pp.

- Conference Proceedings

1. Tian, B., B. J. Soden, and X. Wu, 2003: The diurnal cycle of convection, clouds, and water vapor in the tropical upper troposphere: Satellites vs. a GCM. Gordon Research Conference on Solar Radiation and Climate, New London, NH.

2. Tian, B., and B. J. Soden, 2003: The diurnal cycle of upper tropospheric water vapor. 13th ARM Science Team Meeting, Broomfield, CO.

3. Tian, B., and V. Ramanathan, 2002: A simple moist model of the Hadley and Walker circulation: The role of cloud radiative forcing. 82nd AMS Annual Meeting, Orlando, FL.

4. Tian, B., and V. Ramanathan, 2001: Role of tropical clouds in surface and atmospheric energy budget. 2001 AGU Fall Meeting, San Francisco, CA.

5. Tian, B., and V. Ramanathan, 2001: Tropical cloud radiative forcing and the

Hadley/Walker circulation: A simple model. 11th AMS Conference on the Interaction of the Sea and Atmosphere, San Diego, CA.

6. Tian, B., and V. Ramanathan, 2001: Tropical cloud radiative forcing and the large-scale atmospheric energy transport. 11th ARM Science Team Meeting, Atlanta, GA.

7. Tian, B., and V. Ramanathan, 2001: Tropical cloud radiative forcing and the Hadley/Walker circulation: A simple model. 81st AMS Annual Meeting, Albuquerque, NM.

8. Tian, B., and V. Ramanathan, 2000: Cloud radiative forcing and the large-scale atmospheric energy transport. 2000 AGU Fall Meeting, San Francisco, CA.

9. Tian, B., and V. Ramanathan, 2000: Tropical cloud radiative forcing and the Hadley/Walker circulation. 22nd CERES Science Team Meeting, Huntsville, AL.

10. Tian, B., G. J. Zhang, and V. Ramanathan, 1999: On the heat balance in the warm pool atmosphere. 1999 AGU Fall Meeting, San Francisco, CA.